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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,068	11/29/2006	Pasi Laakkonen	43289-230045	1226

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EXAMINER	
LEWIS, JUSTIN V	

ART UNIT	PAPER NUMBER
3725	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,068	LAAKKONEN ET AL.	
	Examiner	Art Unit	
	JUSTIN V. LEWIS	3725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *41-80* is/are pending in the application.

4a) Of the above claim(s) *57-80* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *41-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :7/29/2010, 11/13/2009, 12/11/2007, 4/24/2006.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 41-56 in the reply filed on 17 December 2010 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 41-42, 46-52, 54 and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,956,015 to Hino ("Hino").

Regarding claim 41, Hino anticipates a method in a diffractive color system that specifies target colors that are formed by additively mixing together two or more diffractively produced primary colors, the method comprising: i) forming an application-specific group of primary color candidates, to which group primary color candidates are selected (see col. 2, lines 28-31, providing that the amount of primary colors to be included within a mix is the function of a particular algorithm) by using as a main selection criterion a luminance reached with them in application-specific illumination conditions in question (see col. 3, lines 11-19, providing that measured luminance is taken into consideration in algorithms defining the precise amount of each primary color to include within a mixture); ii) selecting at least two primary colors from said group of primary color candidates so that said target color is located in the color space on an

area, which can be covered by additively mixing together said selected primary colors (see col. 2, lines 21-32, providing that specific amounts of primary colors are selected in order to replicate other colors); and iii) determining a target-color-specific mixing ratio for these selected primary colors, so that said target color is achieved in the application-specific illumination conditions by additively mixing the selected diffractively produced primary colors at said mixing ratio (see col. 2, lines 28-31, providing a formula for determining the amount of certain primary colors that must be mixed in order to match a color).

Regarding claim 42, Hino anticipates the method according to claim 41, further comprising selecting the primary color candidates to correspond to spectral features distinguishable in the spectrum of illumination (see col. 2, lines 28-31, providing a formula for determining the amount of certain primary colors that must be mixed in order to match a color with a certain spectral energy distribution).

Regarding claim 46, Hino anticipates the method according to claim 41, further comprising designing for each primary color candidate a diffractive elementary grating (the grid that exists on the computer monitor on which the various matched colors are to be shown), which grating is formed on a substrate (note that said grid exists on the computer monitor) and which grating is adapted to reproduce said primary color (note that the pixels defined within said grating will reproduce said color; see col. 6, lines 27-28, providing that the monitor shows a color display output).

Regarding claim 47, Hino anticipates the method according to claim 46, further comprising: forming a diffractive basic area unit (area of computer monitor showing a

matched color) on the substrate (computer monitor) in order to reproduce a target color (note that said area is the area of a computer monitor showing a matched color), said basic area unit (area of computer monitor showing a matched color) being formed of the elementary gratings (the grid that exists on the computer monitor on which the various matched colors are to be shown) corresponding to the primary colors selected for said target color (note that the color shown on the computer monitor is the color display output 30, said color being the one that is the result of the match).

Regarding claim 48, Hino anticipates the method according to claim 47, further comprising coding the mixing ratio of the primary colors selected for said target color in said basic area unit (area of computer monitor showing a matched color) to the area ratios of the elementary gratings (the grid that exists on the computer monitor on which the various matched colors are to be shown) corresponding to the primary colors (note that in displaying the ultimate target color in the basic area unit [area of computer monitor showing a matched color], it will be necessary to compute the mixing ratio of the primary colors to achieve said target color, and then apply said target color to an algorithm that will control the content of the individual pixels located within the basic area unit [area of computer monitor showing a matched color]).

Regarding claim 49, Hino anticipates the method according to claim 47, further comprising taking into account the color of the substrate when specifying said primary color mixing ratio (see col. 3, lines 19-21, providing that variables Xn, Yn and Zn, as used within a formula are the coordinates associated with a particular color when applied to a perfect reflective surface; note that in said provision, Hino considers the

possible effect that an imperfect substrate color could have on the invention and negates any such effect by indicating that the substrate is "perfectly reflective").

Regarding claim 50, Hino anticipates the method according to claim 47, wherein said basic area unit (area of computer monitor showing a matched color) is formed of the elementary gratings (the grid that exists on the computer monitor on which the various matched colors are to be shown) as an array-like pixelated structure (note that said grid is comprised of an array of pixels), in which an individual elementary grating represents an individual pixel (note that said grid is comprised of an array of pixels).

Regarding claim 51, Hino anticipates the method according to claim 50, wherein the dimensions of said basic area unit (area of computer monitor showing a matched color) in all directions along the plane of the substrate (computer monitor) are selected to be substantially equal (see fig. 4, wherein display output 30 is substantially square).

Regarding claim 52, Hino anticipates the method according to claim 47, wherein said basic area unit (area of computer monitor showing a matched color) is formed of elementary gratings (the grid that exists on the computer monitor on which the various matched colors are to be shown) as a banded pixelated structure (note that said grid is comprised of an array of pixels).

Regarding claim 54, Hino anticipates a diffractive color system that specifies target colors that are formed by additively mixing together two or more diffractively produced primary colors, wherein the target colors contained in the color system are specified by forming an application-specific group of primary color candidates (see col. 2, lines 28-31, providing that the amount of primary colors to be included within a mix is

the function of an algorithm), to which group the primary color candidates have been selected by using the luminance reached with them in the application-specific illumination conditions in question as a main selection criterion (see col. 3, lines 11-19, providing that measured luminance is taken into consideration in algorithms defining the precise amount of each primary color to include within a mixture), in order to produce a specific target color, at least two primary colors have been selected from said group of primary color candidates (see col. 2, lines 11-14, providing that most human perceptible colors may be generated by adding primary colors such as red, green and blue) in such a manner that said target color is located in the color space on an area, which can be covered by additively mixing together said selected primary colors (see col. 2, lines 28-31, providing that the amount of primary colors needed to match a particular color with a particular spectral distribution are defined by a provided algorithm), in which case a target color specific mixing ratio has been determined for the target color selected in this way, so that said target color is achieved in application-specific illumination conditions by additively mixing the selected primary colors at said mixing ratio, and information on the primary colors selected to produce said target color and on their mutual mixing ratios is stored (see col. 9, lines 1-4, providing that various coefficients associated with the color matching operation are stored).

Regarding claim 56, Hino anticipates the color system according to claim 54, wherein information contained in the color system is presented as a multi-dimensional color chart (color patch 24, shown in fig. 4).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 43-45, 53 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hino.

Regarding claim 43, Hino discloses the method according to claim 42, but fails to specifically disclose the selection of the primary color candidates to correspond to the strongest spectral bands or lines of light emitted by a fluorescent lamp. However, Hino discusses the differences in color appearances existing between that seen by a human being and that seen by a scanner in operation (see col. 1, lines 24-30). Note that it is well known in the art that scanners frequently employ fluorescent tube lighting in order to illuminate an image for image capture and copying purposes. As such, it would have

been obvious to a person of ordinary skill in the art at the time of the invention to select primary color candidates corresponding to the fluorescent light emitting from a scanner illumination tool in order to ensure that accurate colors are read by the scanner in operation.

Regarding claim 44, Hino discloses the method according to claim 43, but fails to specifically disclose the step of selecting the primary color candidates to correspond substantially to the wavelengths of 437 nm, 490 nm, 545 nm and 615 nm. However, the overall body of Hino's disclosure provides that such calculations may be provided (see figs. 1-2 in light of col. 5, lines 28-31, providing that the two graphs represent RGB functions for matching all the wavelengths of the visible spectrum). It would have been obvious to a person of ordinary skill in the art at the time of the invention to select primary color candidates corresponding with the aforementioned wavelengths in order to achieve maximal color results at various points within the color spectrum.

Regarding claim 45, Hino discloses the method according to claim 42, but fails to specifically disclose the selection of the primary color candidates to correspond to spectral bands or lines distinguishable in the illumination implemented by means of semiconductor emitters. However, Hino makes repeated mention of the use of various ambient lighting sources. Accordingly, it would have been obvious to a person of ordinary skill in the art at the time of the invention to attempt to ascertain primary color ratios necessary to achieve a certain resultant color when illuminated by means of many devices, including semiconductor emitters.

Regarding claim 53, Hino discloses the method according to claim 52, but fails to disclose the dimension of said basic area unit (area of computer monitor showing a matched color) in at least one direction along the plane of the substrate being selected to be substantially greater than the dimensions of the basic area unit in the other directions along the plane of the substrate. However, such a configuration would have been an obvious matter of design choice, as a rectangular display output 30 could be used instead of a square display output 30 without affecting the overall operation of the invention.

Regarding claim 55, Hino discloses the color system according to claim 54, wherein in order to reproduce a specific target color, a diffractive basic area unit (area of computer monitor showing a matched color) is further specified, which unit comprises elementary gratings (the grid that exists on the computer monitor on which the various matched colors are to be shown), wherein information on the characteristics of said basic area unit producing the target color in question and the elementary gratings contained in it is stored in a target color-specific manner (see col. 9, lines 1-4, providing that various coefficients associated with the color matching operation are stored), but fails to disclose said diffractive basic area unit (area of computer monitor showing a matched color) reproducing the primary colors selected for said target color, the mutual area ratios of which elementary gratings being selected to correspond to the mixing ratio of the primary colors determined for producing the target color. However, such a display configuration would have been a matter of design choice, which would have been obvious to a person of ordinary skill in the art at the time of the invention, in order

to provide the end user with more of graphic-based indicator of the ultimate target color that will be obtained via a mixture of the primary colors.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: European Patent Application No. EP 0 975 150 A2 to Ohga; European Patent Application No. EP 0 550 212 A1 to Magee; U.S. Patent No. 3,434,227 to Brown; U.S. Patent No. 7,355,737 to Minowa; and U.S. Patent No. 6,084,621 to Shioya.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUSTIN V. LEWIS whose telephone number is (571)270-5052. The examiner can normally be reached on M-F 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dana Ross can be reached on (571) 272-4480. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dana Ross/
Supervisory Patent Examiner, Art Unit 3725
/JVL/